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ABSTRACT

This study examined the relationship between educational achievement and ethnicity as related to enrollment patterns of Wisconsin high school and college students. The purpose of the study was to identify the points at which minority students leave the educational system. The data utilized for the study were the enrollment data for 1973-74 and 1974-75. Cohort-survival models of Wisconsin students moving through high school, from high school to the University of Wisconsin and through the university were used. Ethnic identification was the independent variable. The study had three major findings. Ethnic composition in the school district is itself related to attrition patterns. Minority high school graduates are as likely to attend the University of Wisconsin as are non-minority high school graduates. The flow of students through the university system may indicate higher attrition for some minority groups compared with non-minority students. The study concluded that without a change in the Milwaukee secondary school attrition pattern, minority groups will never be proportionately represented in the higher educational system of the state. Furthermore development of support programs for minority students in the university system might also have a significant affect upon college enrollments.
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EDUCATIONAL ENROLLMENT PATTERNS

OF MINORITY ETHNIC GROUPS IN WISCONSIN

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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ABSTRACT

EDUCATIONAL ENROLLMENT PATTERNS OF
MINORITY ETHNIC GROUPS IN WISCONSIN

This study utilizes enrollment data for 1973-74 and 1974-75 to construct cohort-survival models of Wisconsin students moving through high school, from high school to the University of Wisconsin and through the university, using ethnic identification as an independent variable.

The three major findings are:

(1) Attrition of minority students between ninth and twelfth grades in Wisconsin secondary schools is 41 percent, compared to 12 percent for non-minority students. Ethnic composition in the school district is itself related to attrition patterns.

(2) Minority high school graduates are as likely to attend the University of Wisconsin as are non-minority high school graduates.

(3) Data showing the flow of students through the university system, although not reliable, may indicate higher attrition for some minority groups compared with non-minority students.

The paper concludes that, without a change in the Milwaukee secondary school attrition pattern, minority groups will never be proportionately represented in the higher educational system of the state. Further development of support programs for minority students in the university system might have a significant affect upon college enrollments as well. Support of longitudinal research on properly selected samples of students is essential to a further understanding of minority enrollment patterns which is not possible with existing group data.

Robert Birnbaum

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In the 1974-75 academic year, there were 4,879 minority group students enrolled in the ninth grade in public secondary schools in Wisconsin, constituting 5.6 percent of their total enrollment. In contrast, senior year resident students enrolled in the University of Wisconsin System at that time included only 430 minority persons, comprising 2.1 percent of the class. This is representative of the educational enrollment patterns which typify our society and which both reflect and to some extent cause the many inequities which exist between minority groups and representatives of the dominant culture.

This study examines the flow of students through the educational system of Wisconsin, with particular attention to the relationship between educational achievement and ethnicity. Its purpose is to identify in precise terms the points at which minority students leave the system so that the attention of those who make public policy can focus more effectively upon appropriate corrective measures.

The study is based on two premises. First, that higher education with all of its acknowledged flaws and weaknesses still serves as one of society's chief institutions for social and economic mobility. Second, that in a truly equitable society, the probability of college attendance should be roughly comparable for members of all ethnic groups, and discontinuities in educational achievement levels of minority groups compared to those of other students are indicative of social and educational problems which should be corrected.

It follows from these premises that our society should have as a major goal the enrollment of at least the same proportion of minority group students in colleges and universities compared with their representation in lower levels of the educational system as is true for non-minority students. This is not only because of its affects upon minority students but its impact upon non-minority students as well. Because of housing patterns, the great majority of White Wisconsin school-age youth attend elementary and secondary schools in which there is little, if any, probability of contact with members of minority groups.(1) In Wisconsin, as in other states, colleges and universities offer literally the only opportunity for interaction between young people of different ethnic backgrounds.

This study is limited in scope. It deals primarily with the progress of student cohorts through the school system, using ethnic identification as an independent variable, without attempting to determine the reasons for differences which may exist. It seeks to identify critical periods in the student flow process, and the relative effects of intervention into the present patterns of student

progress during these periods, without recommending what forms these interventions might take (or, indeed, without assurance that the education profession is capable of successful intervention in dealing with the problems at all).

The study is also limited by its sources of data, the means used to collect the data, and the definitions of several critical factors. The ethnic census of public elementary and secondary schools, for example, is conducted by each school district in the state without standardized guidelines defining how membership in various ethnic groups is to be established. In different districts and in different schools within a single district, a student may be identified as Black, Asian American, Native American, Spanish-surnamed American, or "other" by a classroom teacher or school principal upon visual inspection by review of records completed by the parent, or by asking students to identify the category into which they fall. The validity and reliability of such a process is subject to challenge.

Student progress is treated on a unidimensional basis, and determined only by the size of cohorts as they move forward in the system without regard to level of achievement or program in which they are enrolled. Ethnicity is also treated as a single variable, ignoring the hidden correlates of achievement test scores, socio-economic status, and school grades among other factors that themselves are related to the probability of going to college.

The flow of students identified here may be somewhat distorted by other factors as well, since the movement of students between secondary schools and college in Wisconsin does not take place within a closed system. For example, the study does not include students who left Wisconsin to attend college in another state, nor does it specifically identify students who enter college long after high school graduation. In addition, the census of higher education enrollments includes only colleges and universities, and therefore does not consider persons continuing their education in other forms of post-secondary institutions. In general, these limitations do not appear to be of a magnitude sufficient to negate the conclusions of the study. While it would be unwise to make sweeping generalizations based on some of the small statistical differences which have been found between groups, the major trends appear both strong and stable. They would probably be only marginally affected were the limitations overcome by various techniques. This study is not concerned with differences which are educationally trivial, even if statistically significant. Rather, it points to differences between ethnic groups of great magnitude--some so large that even error rates of twenty percent or more would not materially affect the basic conclusions.

THE MOVEMENT OF STUDENTS THROUGH THE ELEMENTARY AND SECONDARY SCHOOL SYSTEM

Total Enrollments

As of September 20, 1974, there were 1,147,630 students enrolled in grades nursery through twelve in the elementary and secondary schools of Wisconsin. Of these, 974,333 (84.9 percent) were enrolled in public schools and 173,297 (15.1 percent) were enrolled in nonpublic institutions.(2)

No data exist indicating the ethnic distribution of students in all nonpublic institutions, although summary information is available indicating the distribution of Catholic schools which enroll approximately three-fourths of all nonpublic school students. This information will be referred to later in the study. The Wisconsin Department of Public Instruction conducts an ethnic census of enrollments in public schools during the month of January. The 1974-75 census included 972,744 students, with the small loss of 1,589 students from the September count being accounted for by the four-month difference in the data collection dates. The ethnic distribution of public school enrollments is shown below in Table I. This census indicated a total enrollment of 69,000 minority group students in the Wisconsin public school system, comprising 7.1 percent of all enrollments.(3)

TABLE I
Ethnic Distribution of Public School Students, 1974-75(4)

Group	Number	Percent
Native American	8,002	0.8
Black American	47,171	4.8
Asian American	2,426	0.2
Spanish-surnamed American	11,401	1.2
Other	903,744	92.9
Total	972,744	99.9*

Distribution by School Type and Instructional Level

The distribution of students in public and nonpublic schools was significantly different at the elementary and secondary instructional levels. Of the total of 786,765 students enrolled in grades K-8 (including nursery enrollments), 18.4 percent were enrolled in nonpublic schools, and 81.6 percent were students in public institutions. The proportion of nonpublic students

*Percentages in this and other tables may not always total 100.0 percent due to rounding.

significantly declined in grades 9-12, however, with only 29,252 or 8.1 percent of the total of 361,665 enrollments seen in the nonpublic sector compared to 332,413 students (91.9 percent of the total) in public schools.(5)

For public instruction, the ethnic distribution of students is different at differing grade levels, as seen in Table II.

TABLE II
Ethnic Distribution of Public School Students by Instructional Level, 1974-75(6)

	Grades K-8		Grades 9-12	
	N	%	N	%
Native American	5,542	0.9	2,096	0.6
Black American	31,697	5.1	11,024	3.4
Asian American	1,866	0.3	509	0.2
Spanish-surnamed American	8,341	1.3	2,590	0.8
Other	574,504	92.4	311.314	95.0
Total	621,950	100.0	327,533	100.0

In public elementary schools, grades K-8, the 47,446 minority group students comprised 7.6 percent of all enrollments. In public secondary school grades 9-12, however, the total of 16,219 minority group students was only 5.0 percent of all enrollments. Neither figure includes the 14,326 students identified as "special education" or the 8,935 identified as "ungraded," although it is worthy of note that minority group students, and particularly Blacks, are significantly overrepresented in these categories.(7)

Distribution Within Secondary School Grades

Since the purpose of this study was to determine the flow of students through the Wisconsin educational system, an analysis of secondary school enrollments is of critical importance for two reasons. First, it is during the secondary school experience that students pass the compulsory education age of sixteen, and they for the first time have an opportunity to legally withdraw from the system.(8) Second, high school graduation is itself a critical determinant of future choices, since (with few exceptions) only high school graduates may attend college as degree students. The enrollment of students in grades 9-12 of Wisconsin public secondary schools is shown in Table III.

TABLE III
Ethnic Distribution of Public School Students, Grades 9-12, 1974-75[9]

	Native American		Black American		Asian American		Spanish Surnamed American		Other		Total	
Grade	N	%	N	%	N	%	N	%	N	%	N	%
9	634	0.7	3,300	3.8	155	0.2	790	0.9	81,611	94.4	86,490	100.0
10	590	0.7	3,376	3.9	139	0.2	716	0.8	80,929	94.4	85,750	100.0
11	466	0.6	2.604	3.2	101	0.1	606	0.8	76,926	95.3	80,703	100.0
12	406	0.5	1,744	2.3	114	0.2	478	0.6	71,848	96.3	74,590	99.9
Total	2096	0.6	11,024	3.4	509	0.2	2590	0.8	311,314	95.0	327,533	100.0

The two most important rows in Table III are those comparing the ethnic distribution of students in grade nine with those in grade twelve. Total ninth grade enrollment of 86,490 students can be compared with a total twelfth grade enrollment of 74,590 which is 13.8 percent lower. The differences between these two figures can be primarily attributed to student attrition between ninth and twelfth grades, but may also be partially due to other factors such as changes in the distribution of the population pool.

The change of 13.8 percent between ninth grade and total twelfth grade enrollments is disproportionate for different ethnic groups. Enrollment differences for non-minority group students show a change of 12.0 percent while the comparable difference for minority group students is 43.8 percent or over three and one half times greater.

It is improper to treat differences between ninth and twelfth grade enrollments in 1974-75 as equivalent to a measurement of attrition, or school "drop out" rate, however. This equivalence can only be supported in a steady-state enrollment situation in which the entering ninth grade class has the same ethnic composition as the twelfth grade class three years before, and the net migration of students in and out of the system due to all factors other than "dropping out" remains constant during that period.

There is only one unequivocal method of determining attrition, and that is through a longitudinal study in which the records of individual students are traced through the system over an extended period of time. In the absence of such data, the cohort-survival method can provide an approximation of attrition.

The cohort-survival methodology compares enrollments in one grade with enrollments in the next higher grade one year later. This permits the calculation of change between years which reflects all net migration but which makes no assumptions about the differences in the distribution of entering ninth grade classes. Changes between ninth, tenth, and eleventh grade enrollment distribution in 1973-74 and tenth, eleventh and twelfth grade enrollments respectively in 1974-75 can be treated to *approximate* the ninth grade to twelfth grade attrition rate. The cohort-survival method assumes that the changes in enrollments between the two years in which data are collected are not atypical for any reason, and deals with net changes in which movement both in and out of the system are included. It is therefore possible (if highly unlikely) to have 100 students enrolled in the ninth grade, to have all these students leave the system and to have a completely different cohort of 100 students enrolled in the tenth grade one year later. This group would show a perfect cohort-survival ratio of 1.00 even though none of the original students were represented in the second measurement.

Data for the cohort-survival analysis were available for the 1973-74 and the 1974-75 academic years.(10) Enrollment for these two years, together with the cohort-survival ratios for each year, and combined for grades 9-12, are shown in Table IV.(11)

TABLE IV
Ethnic Distribution of Grade Cohorts for Public School Students
Grades 9-12, 1973-74 to 1974-75

	Enrollment					
Year and Grade	Native American	Black American	Asian American	Spanish Surnamed American	Other	Total
1973-74, 9th Grade	630	3427	132	795	81,807	86,791
1974-75, 10th Grade	590	3376	139	716	80,929	85,750
Survival Ratio	.937	.985	1.053	.900	.989	.988
1973-74, 10th Grade	511	3247	109	689	80,062	84,618
1974-75, 11th Grade	466	2604	101	606	76,926	80,703
Survival Ratio	.912	.802	.927	.880	.961	.954
1973-74, 11th Grade	510	2577	96	548	77,662	81,393
1974-75, 12th Grade	406	1744	114	478	71,848	74,590
Survival Ratio	.796	.677	1.188	.872	.925	.916
Combined 9th-12th Grade Survival Ratio	.680	.535	1.160	.691	.879	.863
Net Attrition Rate	-.320	-.465	+ .160	-.309	-.121	-.137

Comparing the net attrition rates in Table IV with the differences in enrollment between ninth and twelfth grades in Table III indicates very close correspondence in all categories except Asian American. A net attrition rate of 32.0 percent for Native Americans is not much different from the 36.0 percent between ninth and twelfth grade enrollments. Similarly, the comparable figures for Black students are 46.5 percent and 47.2 percent, for Spanish-surnamed Americans 30.9 percent and 39.5 percent, for non-minority students 12.1 percent and 12.0 percent, and for the total group 13.7 percent and 13.8 percent. The differences between a +16.0 percent increase of Asian American students as the net attrition and the drop of -26.4 percent between ninth and twelfth grade enrollments is probably due to changes in migration patterns and initial class distributions. It may also reflect problems related to a very small group in which relatively small changes in number can have major affects upon percentages.

The use of the cohort-survival method clearly indicates the differential in attrition related to ethnicity. While approximately 12 percent of all non-minority students leave school between ninth and twelfth grades, more than 46 percent of all Black students do so. The attrition rate of Native Americans and Spanish-surnamed Americans, at 32 percent and 31 percent respectively, is between the non-minority and the Black student figures.

Ethnic Population of School Districts

The attrition data presented in Table IV summarizes data collected from 382 public school districts which had students enrolled in the twelfth grade in 1974-75. Because these districts range widely in size and ethnic mix, an analysis was done to attempt to determine whether the attrition rates seen above were uniform across the state, or whether they were related to the ethnic composition of the district. To do this, each of the districts was placed in one of three categories.

The first category consisted solely of the Milwaukee School District. This district is not only by far the largest in the state, but also has the largest number of minority students. Both characteristics appear to justify treating it as a separate entity.

The second category consisted of all districts in the state in which minority group students composed at least one percent of the total enrollment, and in which there were five or more minority group students in the twelfth grade in 1973-74. There were 31 school districts in this category and they shall be referred to as the "31 districts."

The third category included the remaining 350 districts. The ethnic distribution of ninth-twelfth grade enrollments in these three categories is shown in Table V. In Table VI, the same data are presented with percentages calculated by column rather than row.

The data in Tables V and VI can be compared in several ways. Some of the generalizations supported by these data are:

- Milwaukee enrolled 64.4 percent of all minority students in public high schools in Wisconsin, although its total enrollment was only 10.8 percent of the state.

- There were 350 districts in the state which enrolled 65.6 percent of all public high school students, but only 9.4 percent of all minority students.

- Ethnic groups were distributed in different patterns around the state. Milwaukee enrolled 81.9 percent of all Black students, with all but 1.5 percent of the remainder enrolled in the 31 districts. Native Americans, on the other hand, had a completely different pattern, with 59.8 percent enrolled in the 31 districts, 29.1 percent enrolled in other districts, and only 11.2 percent enrolled in Milwaukee. Spanish-surnamed Americans were almost evenly balanced between Milwaukee (42.0 percent) and the 31 districts (38.4 percent), with 19.5 percent distributed among the other 350 districts in the state.

TABLE V

Ethnic Distribution of Public High School Students in Three School District Categories, 1974-75

	Native American		Black American		Asian American		Spanish Surnamed American		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Milwaukee	234	0.7	9,032	25.5	92	0.3	1,088	3.1	24,951	70.5	35,397	100.1
31 Districts	1,253	1.6	1,827	2.4	180	0.2	996	1.3	73,167	94.5	77,423	100.0
Other Districts	609	0.3	165	0.1	237	0.1	506	0.2	213,196	99.3	214,713	100.0
Total	2,096	0.6	11,024	3.4	509	0.2	2,590	0.8	311,314	95.0	327,533	100.0

TABLE VI

Distribution of Minority Students in Three Categories of Public High School Districts, 1974-75

	Native American		Black American		Asian American		Spanish Surnamed American		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Milwaukee	234	11.2	9,032	81.9	92	18.1	1,088	42.0	24,951	8.0	35,397	10.8
31 Districts	1,253	59.8	1,827	16.6	180	35.4	996	38.5	73,167	23.5	77,423	23.6
Other Districts	609	29.1	165	1.5	237	46.6	506	19.5	213,196	68.5	214,713	65.6
Total	2,096	100.1	11,024	100.0	509	100.0	2,590	100.0	311,314	100.0	327,533	100.0

It has already been indicated that attrition rates in public high schools were differentially related to ethnicity. The secondary question is now raised of whether this differential was, in turn, related to the ethnic distribution of the school districts. To examine this issue, a cohort-survival analysis was done for grades 9-12 during the 1973-74 and 1974-75 school years for the three school district categories used earlier. As before, the cohorts were defined both by grade and by ethnic identification. The attrition rates developed in this analysis are shown in Table VII.

TABLE VII
Attrition Rates Between Grades 9 and 12 for Students in Three School District Categories, by Ethnic Group

	Native American	Black American	Asian American	Spanish Surnamed American	Other	Total
Milwaukee	-48.3	-51.0	+133.8	-42.8	-29.5	-35.2
31 Districts	-41.1	-25.0	+ 59.9	-23.7	-13.0	-13.9
Other Districts	+11.7	+30.2	- 32.4	-16.7	- 9.3	- 9.3
Total	-32.0	-46.5	+ 16.0	-30.9	-12.1	-13.7

Data in Table VII indicate that within the three categories of school district the higher the proportion of minority students the higher the attrition rate for non-minority students and for students in all minority ethnic groups except Asian Americans.

TABLE VIII
Twelfth Grade Enrollment by School District Category & Ethnic Group, 1974-75

	Native American		Black American		Asian American		Spanish Surnamed American		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Milwaukee	52	12.8	1365	78.3	17	14.9	171	35.8	5,522	7.7	7,127	9.6
31 Districts	233	57.4	336	19.3	44	38.6	195	40.8	16,755	23.3	17,563	23.5
Other Distr.	121	29.8	43	2.5	53	46.5	112	23.4	49,571	68.9	49,900	66.9
Total	406	100.0	1744	100.1	114	100.0	478	100.0	71,848	99.9	74,590	100.0

Milwaukee, with the highest proportion of minority students in grades 9-12 among the three school district categories (29.5 percent) also has the highest attrition rates for Native Americans (-48.3 percent), Black students (-51.0 percent), Spanish-surnamed Americans (-42.8 percent) and non-minority students (-29.5 percent).

These attrition rates were lower in the 31 school districts, the differences for Native Americans being small, but quite large for Blacks, Spanish surnamed Americans and non-minority students. Both Native American and Black students showed an accretion, rather than attrition in the 31 other districts, probably showing the effects of student migration, but the numbers are too small to be educationally meaningful.

The twelfth grade enrollment data in Table VIII indicate the distribution of students in the twelfth grade for each school district category. Of special interest is the small pool of minority students in the 350 other school districts. The total of 329 minority group students indicates less than one minority student per school district in the twelfth grade.

The College-Eligible Pool

To get into the college-eligible pool, one must first graduate from high school--a simple and obvious fact often overlooked when college attendance patterns are compared to population distributions of ethnic groups.

At this point, a loss of approximately 14 percent of all public school students who enter the ninth grade and who are not attending after Christmas recess in grade 12 has been noted. Except for those who later earn an equivalency diploma, these students are for all intents and purposes lost as potential participants in the higher educational system. What is even more significant is that this attrition rate affects various ethnic groups differentially so that minority group students are much less likely to be enrolled in twelfth grade (and thus maintain their eligibility for the college pool) than are non-minority group students. The differences are quite significant, as are their social consequences. Using the cohort-survival methodology, the net attrition rate of non-minority group students between ninth and twelfth grades was only approximately 12 percent, compared to approximately 41 percent for minority students. Thus it was that while minority students constituted 5.6 percent of public ninth grade enrollments in 1974-75, they constituted only 3.7 percent of the twelfth grade during that year.

This study will now turn its attention to the high school graduating class of 1973-74, which formed the basis for the entering university freshman class of September 1974. By comparing the composition of the high school class to that of the university, an estimate can be made of the movement of different ethnic groups between the two educational systems.

The total twelfth grade pool in September of the 1973-74 school year was 73,415 students. By January 1974 this number has been

reduced to 72,642 students of whom 356 were Native Americans, 1,710 Black Americans, 96 Asian Americans and 450 Spanish-surnamed Americans. Any discussion of college enrollment of minority students must therefore start with the realization that the potential pool of minority candidates from public schools in 1974 did not exceed 2,612 persons in a total population of more than 72,642. In fact, the total pool was somewhat different from the 2,612 indicated as a result of two factors. First, not all students who were enrolled in twelfth grade actually graduated. Second, to this point these calculations have not considered the enrollment of minority group students in nonpublic schools.

Records of DPI[12] indicate that in 1973-74 the number of high school graduates from public institutions was 94.5 percent of the students enrolled in the twelfth grade in September of that year. The college-eligible pool for September 1974 enrollment was therefore decreased to 69,341 students who were graduated during that year.

Assuming that the public high school graduating class in Wisconsin in 1973-74 included 69,341 students who were ethnically distributed in the same proportion as their representation in the entire twelfth grade,[13] the public school college-eligible pool in September 1974 was as shown in Table IX.

TABLE IX
Probable Ethnic Distribution of College-Eligible Pool from Wisconsin Public High Schools, 1973-74

Ethnic Group	N	%
Native American	340	0.5
Black American	1,634	2.4
Asian American	92	0.1
Spanish-Surnamed American	429	0.6
Other	66,846	96.4
Total	69,341	100.0

The data in Table IX indicate a college-eligible pool of only 2,495 minority group students graduating in 1973-74 from public schools in Wisconsin, of a total of 69,341 graduates. In addition to students in public schools, however, there were also students enrolled in nonpublic schools in the state. DPI records[14] indicated 6,716 students enrolled in twelfth grade in nonpublic schools in September 1973 in addition to the 73,415 twelfth grade students in public schools.

Although there are no data available concerning the ethnic distribution of students enrolled in all nonpublic schools in Wisconsin, the Department of Education of the Archdiocese of Milwaukee has conducted an ethnic census of students enrolled in Catholic schools in Wisconsin during the years 1970-71 to 1974-75.(15) Approximately 75 percent of all nonpublic high school enrollment in Wisconsin is represented by Catholic institutions, and this study shall assume that the ethnic distribution of Catholic institutions is identical to that of non-Catholic, nonpublic high schools. The Catholic school data is not available by grade, but only in summary form for grades 9-12. To calculate an approximate distribution of the nonpublic college-eligible pool, it was assumed that these schools had the same differential attrition related to ethnicity, and the same proportion of graduates to twelfth graders, as seen in the public schools. The results of these assumptions and calculations are shown in Table X.

TABLE X
Ethnic Distribution of Catholic High Schools, 1973-74, with Calculated Estimates of Total Nonpublic Twelfth Grade Enrollments and College-Eligible Pool

	Total Catholic		Projected Total Nonpublic		Projected Total Nonpublic Twelfth Grade		Projected Total Nonpublic College-Eligible Pool	
	N	%	N	%	N	%	N	%
Native American	26	0.1	35	0.1	7	0.1	7	0.1
Black American	395	1.9	533	1.9	87	1.3	82	1.3
Asian American	26	0.1	34	0.1	8	0.1	7	0.1
Spanish-Surnamed American	150	0.7	203	0.7	38	0.6	36	0.6
Other	20,758	97.2	28,037	97.2	6,576	97.9	6,214	97.9
Total	21,354	100.0	28,842	100.0	6,716	100.0	6,346	100.0

Table X indicates a total estimate of 132 minority group students in the nonpublic school college-eligible pool, comprising 2.1 percent of all students in the pool. Several of the assumptions used in determining this estimate are questionable; yet the numbers involved are small enough so that even significant differences in these assumptions would have little affect on the projection. For example, even assuming at the outer limit that twelfth grade enrollments were distributed by ethnic group exactly as the total nonpublic high school enrollment, and that 98 percent of all twelfth graders graduated compared to 94.5 percent in the public sector, the total number of minority students in the college-eligible pool would increase from

132 to 183. This difference of 51 minority students is not trivial, but is relatively minor when compared to the pool of 2,495 minority graduates from public schools.

An estimate of the total college-eligible pool in 1973-74, combining data from both public and nonpublic institutions, is shown in Table XI. There was in the state of Wisconsin a pool of approximately 75,687 students who met the minimum criteria and could therefore be considered for admission to the college class entering in September 1974. Of the total pool, there were approximately 347 Native Americans, 1,716 Black Americans, 99 Asian Americans, and 465 Spanish-surnamed Americans--a total of 2,627 minority group members. This number places an outside limit on the number of minority group persons eligible to enter the higher educational system from among the pool of Wisconsin high school graduates in 1974.

TABLE XI
Probable Ethnic Distribution of Total College-Eligible Pool
Public and Nonpublic High Schools, 1973-74

Ethnic Group	Type of School		Total	
	Public	Nonpub	N	%
Native American	340	7	347	0.5
Black American	1,634	82	1,716	2.3
Asian American	92	7	99	0.1
Spanish-Surnamed American	429	36	465	0.6
Other	66,846	6,214	73,060	96.5
Total	69,341	6,346	75,687	100.0

The next section of this study will consider the movement of students from the college-eligible pool into higher education with particular attention to differential rates related to ethnicity.

THE MOVEMENT OF STUDENTS THROUGH THE UNIVERSITY SYSTEM

Total Enrollments

The Wisconsin Association of Collegiate Registrars and Admissions Officers (WACRAO) has reported that there were 148,204 undergraduate students enrolled in institutions of higher education in Wisconsin in September 1974.(16) The distribution of students by institutional category is shown in TABLE XII.

TABLE XII
Distribution of Undergraduate Enrollments in Wisconsin
September 1974

Category	N	%
Public:		
Univ. of Wisconsin	116,821	78.8
Vocational-Technical	5,912	4.0
Subtotal	(122,733)	(82.8)
Private:		
Colleges and Universities	22,864	15.4
Jr. Colleges, Technical & Professional, Seminaries	2,607	1.8
Subtotal	(25,471)	(17.2)
TOTAL	148,204	100.0

The latest published data indicating the ethnic distribution of college and university students in Wisconsin were collected in fall 1972 by the Office of Civil Rights, HEW.(17) They include a somewhat different list of institutions from the group in the WACRAO study, and count only full-time students. Secondary analysis of these data indicates an ethnic distribution for these institutions as shown in Table XIII.

TABLE XIII
Ethnic Distribution of
Wisconsin Full-Time Undergraduate Students, Fall 1972

	N	%
Native American	609	0.5
Black American	3,295	2.4
Asian American	565	0.4
Spanish-Surnamed American	664	0.5
Other	130,540	96.2
TOTAL	135,673	100.0

A comparison of the data in Table XIII with the distribution of the probable ethnic distribution of the college-eligible pool (Table XI) shows very close correspondence. Ethnic minorities made up 3.5 percent of the 1973-74 college-eligible pool, and 3.8 percent of Wisconsin college enrollments in the fall of 1972.

Detailed analysis of these two sets of data is difficult because they deal with different years, include somewhat different subsets of institutions, compare full-time with total enrollment, and do not indicate data by class to permit analysis of the flow of students through the system. To minimize these problems, this study included for further analysis only data from the University of Wisconsin System for the years 1973-74 and 1974-75. The data have the advantage of grouping students by academic year and including both full-time and part-time students. In addition, they permit differentiation between Wisconsin residents and non-residents so that the influence of students entering the system from outside the state can be eliminated for study purposes.

Restricting the analysis to the University of Wisconsin System has several disadvantages as well. The university enrolls 78.8 percent of all college and university students in the state, thus eliminating almost one-fifth of all enrollments from consideration. The 1972 HEW data indicate that the eliminated institutions (private colleges and public vocational-technical institutes) enrolled a higher percentage of minority students in 1972 (5.6 percent of total enrollment) than did the U.W. System (2.8 percent). While this difference is significant, the relatively small number of students enrolled in the private sector suggests that any bias in the results related to consideration of the University of Wisconsin only would be minimal.

The College-Eligible Pool and University Enrollments

The college-eligible pool in September 1974 has been shown to include approximately 75,687 students distributed by ethnic group as shown in Table XI. That distribution is compared with the distribution of new Wisconsin resident freshmen in the University of Wisconsin System as of September 1974 in Table XIV.

TABLE XIV

Distribution of 1974 College-Eligible Pool & New Resident Freshman Enrollments in the U.W. System, by Ethnic Group

	Native American		Black American		Asian American		Spanish Surnamed American		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Coll-Elig. Pool	347	0.5	1716	2.3	99	0.1	465	0.6	73,060	96.5	75,687	100.0
New UW Res. Freshmen	116	0.5	478	2.2	30	0.1	121	0.6	21,150	96.6	21,891	100.0
Freshmen as % of Pool	33.4		27.9		30.3		26.0		28.9		28.9	

The data in Table XIV indicate that the entering freshman class of the University of Wisconsin System in September 1974 had almost exactly the same ethnic distribution as did the college-eligible pool. Minority students comprised 3.5 percent of the pool, and 3.4 percent of the entering freshman class. Differences between the college pool and the entering freshman class were so small for each ethnic group that the largest negative deviation was as few as nineteen students (i.e., had there been nineteen more Black students in the freshman class, their representation would have been identical to that of the college pool), and the largest positive deviation only thirteen students (i.e., had there been thirteen fewer Native American students, their representation would also have been identical). Obviously differences of this magnitude are of no theoretical or practical significance, and it can be stated with reasonable assurance that the resident new freshman class in the University of Wisconsin System in 1974-75 accurately reflected the ethnic distribution of the college-eligible pool of that year.

This does <u>not</u>, however, necessarily indicate that the college-going rates of all ethnic groups were equal. Students from the college-eligible pool attend not only institutions within the University of Wisconsin System, but also nonpublic colleges and universities in the state and institutions outside the state as well. Although it has not been documented, it has been suggested by some observers that relatively large numbers of Black students leave Wisconsin each year to attend predominantly Black institutions in southern states, and that this might have a significant affect upon their comparative college attendance rates. There are, however, no data to indicate whether this trend exists to an extent great enough to balance the opportunities for middle and upper-middle class non-minority students who can afford to attend nonpublic and out-of-state institutions.

<u>Ethnic Enrollments in the University of Wisconsin System</u>

In the fall of 1974, the University of Wisconsin System enrolled a total of 104,504 undergraduate students who were residents of Wisconsin. Of these, 3,633[18] or 3.5 percent were members of minority groups. The enrollment of minority students by class level is shown in Table XV.

TABLE XV

Ethnic Distribution of Undergraduate Wisconsin Residents in the University of Wisconsin System, Fall 1974, by Class Level

	Native American		Black American		Asian American		Spanish Surnamed American		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Fresh	215	0.7	978	3.0	46	0.1	217	0.7	31,142	95.5	32,598	100.0
Soph	79	0.4	580	2.6	44	0.2	129	0.6	21,523	96.3	22,355	100.1
Junior	59	0.3	388	2.0	[illegible]	0.2	79	0.4	19,275	97.2	19,835	100.1
Senior	61	0.3	243	1.2	53	0.3	73	0.4	20,240	97.9	20,670	100.1
Unclass	122	1.3	155	1.7	30	0.3	48	0.5	8,691	96.1	9,046	99.9
Total	536	0.5	2344	2.2	207	0.2	546	0.5	100,871	96.5	104,504	99.9

Table XV contains two major points of interest. The first is that the resident senior class of 20,670 students was only 63.4 percent of the size of the freshman class of 32,598 students. The difference was due to students who permanently or temporarily left the college program prior to graduation and to changes in the size of freshman classes during the early 1970's. The second was that the proportion of minority group students steadily declined with each class level from 4.5 percent in the freshman class to 2.1 percent in the senior class.

Inspection of the data in Table XV will immediately indicate that the total number of resident freshmen (32,598) is significantly higher than the total number of new resident freshmen identified in Table XIV (21,891). This difference is due to the criteria used by the university system to categorize students. A new resident freshman is a student who has never registered in college before, thus making possible reasonable comparisons of this category of student with the college-eligible pool. The definition of a resident freshman, however, includes not only new freshmen but also persons in other groups. Among them are new freshmen of the previous year who have not earned the 24 credits required to be classified as sophomores; transfer students who enter the system with less than 24 credits; and former college drop-outs or stop-outs who have decided to return to higher education.

Unlike the secondary schools which function as a reasonably closed system in which cohorts progress from one grade to the next, the University of Wisconsin is an open system. Students may enter it at various points from the freshman through the senior year, thus making it difficult to determine student flow through a cohort-survival method. Additional problems emerge when this

method is used to examine the movement of ethnic groups. The secondary schools deal with a relatively constant population, and the number of minority students entering the ninth grade each year is primarily a function of a comparatively stable birth pool and migration rate. However, the number of minority students entering the university each year is dependent upon many factors, including the admissions efforts of the institution. Because of aggressive recruiting programs, the number and proportion of new minority freshman students at the University of Wisconsin has increased dramatically. Even during the two years encompassed by this study, the enrollment of new minority freshmen rose from 878 in 1973-74, which was 3.6 percent of new freshman enrollment, to 1,045, or 4.2 percent of the class in 1974-75. (Note that these data include all new freshmen, and not just Wisconsin residents for whom comparable data are not available.) It thus is impossible to determine through the cohort-survival method whether changes in student distribution by college class are due to variable attrition related to ethnicity, to changes in the pool of students entering the system as freshmen, or in other classes, or both.

Despite these problems, this study does include a cohort-survival analysis for the University of Wisconsin for the 1973-74 and 1974-75 academic years. The sole purpose of the analysis is to identify general enrollment patterns to determine if there are differences between the flow of minority students compared to non-minority students of such magnitude that further research would be indicated to determine (a) if the differences really exist, and (b) what is causing them. Any further use of these data to attempt to compare the attrition of various ethnic groups is improper and unsupportable given the present availability of information. For this reason, the analysis shown in Table XVI indicates "survival ratios" between classes only, and does not include either a combined survival ratio or a net attrition rate.

TABLE XVI

Ethnic Distribution of Grade Cohorts for University of Wisconsin System Resident Students, by Class Level, 1973-74 to 1974-75

Year & Grade	Native American	Black American	Asian American	Spanish Surnamed American	Other	Total
1973-74 Fresh	173	767	52	151	30,759	31,902
1974-75 Soph	79	580	44	129	21,523	22,355
Survival ratio	.457	.756	.846	.854	.700	.701
1973-74 Soph	78	497	37	93	22,349	23,054
1974-75 Junior	59	388	34	79	19,275	19,835
Survival ratio	.756	.781	.919	.849	.862	.860
1973-74 Junior	73	282	30	68	19,244	19,697
1974-75 Senior	61	243	53	73	20,240	20,670
Survival ratio	.836	.862	1.767	1.074	1.052	1.049

Data in Table XVI indicate a general pattern for non-minority students of a sizable reduction of enrollment between the freshman and sophomore years, a smaller reduction between the sophomore and junior years, and a net increase between the junior and senior years, likely reflecting the transfer of advanced students into the system.

This pattern is similar to that seen for Spanish-surnamed Americans and Asian Americans, except that the latter group appears to have a greater increase between the junior and senior year than typically found in the system. The pattern of data for Native Americans and Black Americans is different enough, however, to warrant further investigation. Particular attention should be given to the movement of Native American students between their freshman and sophomore years since the limited data shown here indicate the possibility of an atypical survival pattern.

Alternative Policy Strategies

A cohort-survival model of the movement of students of different ethnic groups through the educational system of Wisconsin has been constructed. Inherent in the model is the identification of three major points at which students either make or have made for them decisions which affect the probability that they will move through the system from ninth grade to college senior. The first point is the completion of high school. It has been shown that the cohorts lose about 14 percent of their enrollment between ninth and twelfth grades, with an additional small loss prior to graduation.

Since these students constitute the composition of the college-eligible pool, decreasing attrition prior to high school graduation would increase the number of students ultimately enrolled in the college senior class. In particular, decreasing the difference between the attrition of minority and non-minority high school students would reduce the discrepancies in the ethnic distribution of college seniors.

The second point in the model affecting student distribution is the movement of students between high school and college entrance. There do not appear to be any significant differences in the proportion of each ethnic group moving into the University of Wisconsin from the college-eligible pool. Of the three points in the model, this one appears to be working most equitably and effectively.

The movement of students through the university system is the third major point and, although available data are not good enough to make definitive statements, it is possible that there may be differences in achievement between ethnic groups. Programs which corrected inequities which might exist could significantly impact on the enrollment of these groups in the university senior class.

Three alternative policy strategies thus exist for increasing the enrollment of minority group students in the senior year of college: reduce attrition in high school; increase the college-going rate of high school graduates; or reduce attrition in college.

Given existing problems in collecting and analyzing data it cannot be stated with assurance what the probable effects of initiating programs focused upon each of these three critical variables might be. Even if data were available, they must be viewed with an understanding of their limitations in prescribing policy. For example, given the fact that minority ethnic high school graduates are as likely to attend the University of Wisconsin as are non-minority graduates additional attention to college admissions, recruitment, and counseling would probably have relatively little "statistical payoff" compared to the other two strategies. Yet it is clear that continued attention to and development of such programs are an obligation which must be fulfilled by the higher education community and other concerned agencies.

The data do, however, provide compelling evidence for the overwhelming importance of one significant intervention point, and suggest the importance of a second. The first, and most

important, is the public schools of Milwaukee because this system enrolls a majority of the state's minority students. Programs which could reduce the attrition of minority students in Milwaukee to the average for all non-minority students in the state might virtually eliminate the discrepancy in minority enrollment in the senior year of college. Although there has been significant federal support of Milwaukee schools during the past ten years, the recommendation by the Academy for Educational Development in 1967 is probably as true today as it was then:

> *The Milwaukee school system has recognized the diversity of its student body and has developed many kinds of programs, procedures and organizational arrangements better to meet this wide range of learning needs. They are generally in the right direction but totally inadequate. To make them adequate will require much greater funding.*(19)

It should be noted that programs to increase high school graduation rates must begin early in the school experience, and not merely at the point when a student indicates a desire to leave the educational system. Certainly they should begin no later than upon entrance to secondary school, and may be more effective if started even earlier during the elementary grades.

How much such programs would cost, and how effective various alternatives might be in increasing retention is beyond the scope of this study. Indeed, it cannot be said with certainty that, even with significant support, the goal of increasing the high school retention of minority students to the level of non-minority students is achievable. Years of victimization and discrimination by all of society's institutions may not be amenable to correction by what after all would be a relatively modest alteration in the educational system. What can be said with certainty, however, is that without a change in the Milwaukee attrition pattern, minority groups will never be proportionally represented in the higher education system of Wisconsin. If racial conflict is still the greatest unsolved dilemma of American social life, the city of Milwaukee and the Milwaukee school system are among the few arenas in the state in which the issue is being addressed. An increased commitment to the Milwaukee schools by the people of Wisconsin is an investment with effects potentially reaching well beyond merely the boundaries of the city.

The second major area of need is for the further development of support programs for minority students in the university system. Although the data are inconclusive, Native American

students and to a significant but somewhat lesser extent Black students as well may be less likely to move through the university program to the senior year than non-minority students. Although budget requests for such programs have been rejected by the state for several years, university support programs offer an ideal opportunity to encourage the continued attendance of minority youth. The screening and self-selection processes which precede and accompany college entrance serve to create a pool of highly motivated persons probably more responsive to intervention processes than the more undifferentiated high school population.

The costs of collegiate programs would be relatively modest, and their effects could be significant, if not startling. If, however, the basic problem is to be confronted, it must involve a commitment to the Milwaukee school system. Wisconsin must face up to this challenge if it is to meet the needs and fulfill its promises to all our citizens.

As a footnote to these recommendations, it is urged that immediate attention be given to research which involves the collection and analysis of data offering a clearer picture of the movement of students through the educational system. Longitudinal research evaluating the progress of individual students properly selected through stratified random sampling techniques is the only means by which the generalizations of this study can be verified or refuted. At the present time we do not know the high school graduation rates of minority students, their post-secondary attendance patterns, or their movement through the higher educational system. That we do not know is perhaps another reflection of the degree to which society believes such things are important.

NOTES AND REFERENCES

(1) In 1974 there were 382 public school districts in Wisconsin enrolling students in the twelfth grade. A total of slightly more than 327,000 students were enrolled in grades 9-12 in these districts, of whom 16,219, or 5.0 percent, were non-White. 14,702 of them, or 90.6 percent, were located in only 32 school districts, including Milwaukee. The other 350 school districts, enrolling 214,713 students, had a population of only 1,517 minority students. In those 350 districts, assuming an average class size of thirty, 78 percent of all classes probably did not enroll a single minority student.

This calculation was based on the Poisson distribution, a method for determining the probability of infrequent events (Dennis J. Palumbo, *Statistics in Political and Behavioral Science*, New York: Appleton-Century Crafts, 1969, p. 92). The calculation was done by H. Linsley, Department of Psychology, University of Wisconsin-Oshkosh. Put another way, a White student in these 350 school districts enrolled over time in ten grades or courses would have 299 classmates with whom some interaction would have been possible. It is probable that only two of these 299 would have been members of minority groups.

(2) *Enrollment of Grades by CESA as of 09/20/74*, Department of Public Instruction, computer printout J3214135 and J3214141, p. 20.

(3) Two separate documents published by DPI indicate conflicting enrollment data for Native Americans. The total difference between the two sets of data is 6 percent. The affects of this discrepancy on the calculation of the size of the college-eligible pool is negligible. The smaller DPI enrollment estimate is the one used in this study.

(4) *State Summary of Ethnic Category Information*, DPI Information Series, Number 8, February 1975.

(5) *Enrollment of Grades by CESA as of 09/20/74*, DPI.

(6) *Civil Rights Enrollments*, DPI, computer printout dated 04/01/75 for the 1974-75 school year.

(7) Of 23,261 students identified as "special education" or "ungraded," 1.6 percent were Native Americans, 19.1 percent were Black Americans, 0.2 percent were Asian Americans, and 77.1 percent were Other. Minority students thus composed 22.9 percent of students identified in these two grade categories, although they were only 7.1 percent of total enrollments. The greatest difference between total enrollments and enrollment in these two grade categories was seen for Black students who comprised 4.8 percent of all enrollments, but 19.1 percent of all "special education" and "ungraded" enrollments.

(8) The compulsory attendance age is 18 years in Milwaukee. There is no effective control over attendance, however, and large numbers of students leave the schools prior to that age.

(9) *Civil Rights Enrollments,* op.cit.

(10) *Civil Rights Enrollments,* op cit, and *Civil Rights Enrollments,* DPI, computer printout dated 04/03/75 for the 1973-74 school year.

(11) Net attrition rates were calculated as follows. First, the survival ratios for each grade were determined by dividing the grade enrollment for 1974-75 by the enrollment in the previous grade in 1973-74. For example, tenth grade enrollment of Native American students in 1974-75 of 590 was divided by their ninth grade enrollment of 630 the previous year. The resultant survival ratio of .937 indicated that 93.7 percent of ninth grade Native American students were likely to move into tenth grade the following year.

The survival ratios between ninth and tenth, tenth and eleventh, and eleventh and twelfth grades were then multiplied together to indicate the composite survival ratio between the ninth and twelfth grades. In Table IV, Native American survival ratios of .937 between ninth and tenth, .912 between tenth and eleventh, and .796 between eleventh and twelfth grades were multiplied to produce a combined ninth to twelfth grade survival ratio of .680 (.937 x .912 x .796 = .680). The combined survival ratio was then subtracted from 1.000 to yield the net attrition rate of .320 or 32.0 percent. The attrition rate has been identified as a negative number (i.e., -.320) to more clearly identify it as a reduction in enrollment.

(12) *1970-1974 Wisconsin Public High School Graduates,* DPI Information Series, Number 7, January 1975.

(13) The significant difference in the attrition rates of different ethnic groups might suggest a differential graduation rate of twelfth grade students as well. This possibility was examined in two ways using school district enrollment and graduation data. In one method, school districts were sorted into groups based upon the proportion of minority students enrolled. The graduation rates of twelfth graders in each group were then examined. No significant differences related to the ethnic distribution of the district were found. The second method compared the graduation rate of twelfth grade students for districts which had five or more minority students in twelfth grade with districts with fewer than five such students. Again, no significant differences in graduation rate were noted.

Recent newspaper reports have indicated that 44 percent of Black seniors in the public high schools of Madison in 1974-75 failed to graduate. The data reported in the present study should not be interpreted as indicating that there are no differences between the graduation rates of different minority groups, but rather that the statistical approaches used here were not sensitive enough to detect them if they existed. As in other parts of this study, the actual data concerning graduation rates can be determined only by examining the records of individual students.

(14) *Nonpublic Enrollment of Grades by CESA as of 09/21/73,* DPI, p. 20.

(15) *Enrollment of Minority Students in Catholic Schools,* Reverend Leslie A. Darnieder, Deputy Superintendent of Schools, Archdiocese of Milwaukee (undated).

(16) *The Twenty-First Annual Report of Opening Fall Enrollments in Wisconsin Institutions of Higher Education, First Semester 1974-5,* Wisconsin Association of Collegiate Registrars and Admissions Officers.

(17) *Chronicle of Higher Education,* November 11, 1974.

(18) The figure of 3,633 does not include enrollments in the U.W. Center System because of problems in data collection. Center System enrollments are included in the total enrollment figure, however. The affect on ethnic distribution should be slight; total minority enrollment in the Center System in 1974 was 159, or 2.0 percent of their 8,057 students.

(19) *Quality Education in Milwaukee's Future,* Academy for Educational Development, Inc., August 1, 1967.